

WALCZAK ET AL.  
"Method And System for Validating A  
Mobile Station Location Fix"  
Atty. Docket No. CS10560

Appl. No. 09/769,122  
Confirm. No. 5562  
Examiner S. Bhattacharya  
Art Unit 2685

### **Patentability of Claims Over Kingdon**

#### **Rejection Summary**

Claims 1-3, 9, 12, 13, 15 and 19 stand rejected under 35 U.S.C. 102(b) as being anticipated by U.S. Patent No. 6,411,811 (Kingdon).

#### **Allowability of Claim 1**

Regarding Independent Claim 1, contrary to the Examiner's assertion, Kingdon fails to disclose or suggest a

...method for validating a non-network based location fix of a mobile station in a communications network, comprising:  
generating a non-network based location fix of the mobile station;  
evaluating the validity of the non-network based location fix of the mobile station by comparing the non-network based location fix with a prior network based location fix.

At col. 3, lines 2-19, Kingdon discloses a cellular communication network have multiple GPS receiver stations that provide GPS assistance data (visible satellites, ephemeris and clock correction information) to mobile terminals in the network. In Kingdon, the GPS assistance information is provided by GPS receiver station nearest the mobile terminal's local position estimate, which is determined based on the base transceiver station serving the mobile terminal. King uses the assistance information to determine what satellite to use for computing location. There is no discussion in Kingdon of evaluating the validity of the non-network based location fix by comparing the

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non-network based location fix with a prior network based location fix of the mobile terminal. Claim 1 is thus patentably distinguished over Kingdon.

#### Allowability of Claim 2

Regarding Claim 2, Kingdon fails to disclose or suggest in combination with the limitations of Claim 1,

... generating the non-network based location fix includes receiving global positioning system signals at the mobile station.

While Kingdon discloses determining a GPS based location fix in a mobile terminal, Kingdon does not evaluate the validity of the non-network based location fix by comparing it with a prior network based location fix. Claim 2 is thus further patentably distinguished over Kingdon.

#### Allowability of Claim 3

Regarding Claim 3, Kingdon fails to disclose or suggest in combination with the limitations of Claim 1,

... generating the prior network based location fix by measuring a time related parameter of signals received at the mobile station from several base stations neighboring the mobile station.

The reference GPS receivers in Kingdon provide GPS assistance information, which the mobile terminal uses to identify the satellites that should be used for location computation. Kingdon does not measure timing

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parameters of the reference GPS stations to compute position. Claim 3 is thus further patentably distinguished over Kingdon.

#### Allowability of Claim 9

Regarding Claim 9, Kingdon fails to disclose or suggest in combination with the limitations of Claim 1,

... evaluating the validity of the non-networked based location fix by comparing it to at least one of a plurality of prior network based location fixes.

At col. 4, lines 44-54, Kingdon discusses identifying the reference GPS receiver from which the mobile terminal should obtain GPS assistance information. Kingdon does not disclose comparing a non-networked based location fix with a network based location fix. Claim 9 is thus further patentably distinguished over Kingdon.

#### Allowability of Claim 12

Regarding Independent Claim 12, contrary to the Examiner's assertion, Kingdon fails to disclose or suggest a

... method for validating a satellite positioning system based location fix of a satellite positioning system enabled cellular mobile station in a cellular communications network, comprising:  
generating a satellite positioning system based location fix of the mobile station;

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evaluating the validity of the satellite positioning system based location fix by comparing the satellite positioning system based location fix to a prior network based location fix.

Kingdon discloses a cellular communication network have multiple GPS receiver stations that provide GPS assistance data (visible satellites, ephemeris and clock correction information) to mobile terminals in the network. In Kingdon, the GPS assistance information is provided by GPS receiver station nearest the mobile terminal's local position estimate, which is determined based on the base transceiver station serving the mobile terminal. King uses the assistance information to determine what satellite to use for computing location. Kingdon does not disclose or suggest evaluating the validity of the satellite positioning system based location fix by comparing the satellite positioning system based location fix to a prior network based location fix. Claim 12 is thus patentably distinguished over Kingdon.

#### Allowability of Claim 13

Regarding Claim 13, Kingdon fails to disclose or suggest in combination with the limitations of Claim 12,

... generating the prior network based location fix by measuring at the mobile station a time related parameter of signals received from a plurality of cellular base stations of the cellular communications network neighboring the mobile station.

The reference GPS receivers in Kingdon provide GPS assistance information, which the mobile terminal uses to identify the satellites that should be used for location computation. Kingdon does not measure timing parameters of signals

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from the reference stations for determining a location fix. Claim 13 is thus further patentably distinguished over Kingdon.

#### Allowability of Claim 15

Regarding Claim 15, Kingdon fails to disclose or suggest in combination with the limitations of Claim 1,

... evaluating the validity of the satellite positioning system based location fix by comparing it to at least one of a plurality of prior network based location fixes.

At col. 4, lines 44-54, Kingdon discusses identifying the reference GPS receiver from which the mobile terminal should obtain GPS assistance information. Kingdon does not compare a satellite positioning system based location fix to a plurality of network based location fixes. Claim 15 is thus further patenably distinguished over Kingdon.

#### Allowability of Claim 19

Regarding Claim 19, Kingdon fails to disclose or suggest in combination with the limitations of Claim 1,

... generating a plurality of prior network based location fixes by measuring at the mobile station a time related parameter of signals received from a plurality of cellular base stations of the cellular communications network neighboring the mobile station,  
evaluating the validity of the satellite positioning system based location fix by comparing the satellite positioning system

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based location fix with at least one of the plurality of prior network based location fixes.

At col. 4, lines 44-54, Kingdon discusses identifying the reference GPS receiver from which the mobile terminal should obtain GPS assistance information. Kingdon does not evaluate the validity of a satellite positioning system based location fix by comparing it with at least one of the plurality of prior network based location fixes. Claim 19 is thus further patenably distinguished over Kingdon.

### Patentability of Claims Over Kingdon & Hill

#### Rejection Summary

Claims 4-6 and 8 stand rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 6,411,811 (Kingdon) in view of U.S. Patent No. 5,857,155 (Hill).

#### Allowability of Claim 4

Regarding Claim 4, neither Kingdon nor Hill disclose or suggest in combination with the limitations of Claim 1,

... translating the prior network based location fix and the non-network based location fix into a common format prior to comparing the prior network and non-network based location fixes.

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At col. 1, lines 58-65, Hill discusses comparing known cellular network transmitter coordinates with the GPS position of a mobile terminal. Hill does not compare a network based coordinate of the mobile terminal with a non-network based coordinate of the terminal. Claim 4 is thus further patentably distinguished over Kingdon and Hill.

#### Allowability of Claim 5

Regarding Claim 5, Kingdon and Hill fail to disclose or suggest in combination with the limitations of Claim 1,

... generating the non-network based location fix of the mobile station in longitude and latitude coordinates, converting the prior network based location fix to longitude and latitude coordinates before comparing the prior network based location fix with the non-network based location fix.

Hill discusses comparing known cellular network transmitter coordinates with the GPS position of a mobile terminal. Hill does not compare a network based coordinate of the mobile terminal with a non-network based coordinate of the terminal. Hill also fails to convert a network based location fix to longitude and latitude coordinates before comparing. Claim 5 is thus further patentably distinguished over Kingdon and Hill.

#### Allowability of Claim 6

Regarding Claim 6, Kingdon and Hill fail to disclose or suggest in combination with the limitations of Claim 1,

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... evaluating the validity of the non-network based location fix by determining whether the non-network based location fix is within a specified range of the prior network based location fix.

At col. 3, lines 46-52, Hill discloses control mobile station transmit power based on the distance between a mobile terminal and network transmitters. Hill does not evaluate the validity of a non-network based location fix by determining whether the non-network based location fix is within a specified range of the prior network based location fix. Claim 6 is thus further patentably distinguished over Kingdon and Hill.

#### Allowability of Claim 8

Regarding Claim 8, Kingdon and Hill fail to disclose or suggest in combination with the limitations of Claim 1,

... the communications network having a plurality of base stations,

generating the prior network based location fix by measuring at the mobile station several base station signals neighboring the mobile station,

evaluating the validity of the non-network based location fix by determining whether the non-network based location fix is within a specified range of the prior network based mobile station location fix.

The Examiner's basis for the rejection of Claim 8 is unclear. Claim 6 of Hill discusses maintaining synchronization with a messaging system. Claim 8 is thus further patentably distinguished over Kingdon and Hill.



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### Allowability of Claim 18

Regarding Claim 18, Kingdon and Hill fail to disclose or suggest in combination with the limitations of Claim 17,

... estimating a future location of the mobile station by extrapolating along an estimated path of the mobile station,  
evaluating the validity of the satellite positioning system based location fix by determining whether the satellite positioning system based location fix is within a specified range of the estimated location fix.

At col. 3, lines 46-52, Hill discloses control mobile station transmit power based on the distance between a mobile terminal and network transmitters. Hill does not estimate a future location of the mobile station by extrapolating along an estimated path of the mobile station. Also, Hill does not evaluate the validity of a non-network based location fix by determining whether the non-network based location fix is within a specified range of the prior network based location fix. Claim 18 is thus further patentably distinguished over Kingdon and Hill.

### Patentability of Claims Over Kingdon & Yen

#### Rejection Summary

Claims 10 and 17 stand rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 6,411,811 (Kingdon) in view of U.S. Patent No. 6,539,230 (Yen).

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### Allowability of Claim 10

Regarding Claim 10, neither Kingdon nor Yen disclose or suggest in combination with the limitations of Claim 1,

... evaluating the validity of the non-network based location fix by determining whether the non-network based location fix is closer to a less recently generated network based location fix than it is to a more recently generated network based location fix.

Yen discloses determining whether a location dependent operating parameters stored in association with another location is appropriate for the present location of the mobile terminal based on a distance between the locations. Yen does not evaluate the validity of a non-network based location fix by determining whether the non-network based location fix is closer to a less recently generated network based location fix than it is to a more recently generated network based location fix. Claim 10 is thus further patentably distinguished over Kingdon and Yen.

### Allowability of Claim 17

Regarding Claim 17, neither Kingdon nor Yen disclose or suggest in combination with the limitations of Claim 1,

... evaluating the validity of the satellite positioning system based location fix by determining whether it is nearer to a more recent network based location fix than it is to a less recent network based location fix.

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Yen discloses determining whether a location dependent operating parameters stored in association with another location is appropriate for the present location of the mobile terminal based on a distance between the locations. Yen does not evaluate the validity of the satellite positioning system based location fix by determining whether it is nearer to a more recent network based location fix than it is to a less recent network based location fix. Claim 17 is thus further patentably distinguished over Kingdon and Yen.

### Patentability of Claims Over Kingdon & Bala

#### Rejection Summary

Claim 11 stands rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 6,411,811 (Kingdon) in view of U.S. Publication No. 200200658580 (Bala).

#### Allowability of Claim 11

Regarding Claim 11, neither Kingdon nor Bala disclose or suggest in combination with the limitations of Claim 1,

... estimating a future location fix of the mobile station based on a plurality of prior network based location fixes,  
evaluating the validity of the non-networked based location fix by determining whether the non-network based location fix is within a specified range of the estimated location fix.

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Bala discloses polling subscriber devices in a cellular communication network based on the subscriber's anticipated current location obtained through a statistical analysis of the subscribers movement. In Bala, the polling occurs in the network, not in the subscriber (mobile) device. Further, Bala does not estimate a future location fix of the mobile station based on a plurality of prior network based location fixes. Claim 18 is thus further patentably distinguished over Kingdon and Bala.

### Patentability of Claims Over Fan

#### Rejection Summary

Claims 21-23, 25-27 and 31 stand rejected under 35 U.S.C. 102(b) as being anticipated by U.S. Patent No. 5,906,655 (Fan).

#### Allowability of Claim 21

Regarding Independent Claim 21, contrary to the Examiner's assertion, Fan fails to disclose or suggest a

... method for validating a location fix of a mobile station, comprising:  
generating a plurality of location fixes of the mobile station;  
evaluating the validity of a recently generated location fix of the mobile station by comparing the location fix for which the validity determination is required to a previously generated mobile station location fix.

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At col. 3, lines 2-19, when GPS and inertial navigation unit (INU) position determinations in a mobile machine are mismatched, Fan compares a gyroscope heading rate with a calculated heading rate to determine whether the INU or GPS positions are invalid. Fan does not evaluate the validity of a recently generated location fix of the mobile station by comparing the location fix for which the validity determination is required to a previously generated mobile station location fix. Claim 21 is thus patentably distinguished over Fan.

Allowability of Claim 22

Regarding Claim 22, Fan fails to disclose or suggest in combination with the limitations of Claim 21,

... evaluating the validity of the location fix for which the validity determination is required by determining whether it is within a specified range of the previously generated location fix.

Fan determines whether the GPS or INU location fixes are invalid by comparing gyroscope heading rate with a calculated heading rate, and particularly by determining whether a difference between rates is greater or less than a threshold. Fan does not determine whether a location fix is within a specified range of a previously generated fix. Claim 22 is thus further patentably distinguished over Fan.

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### Allowability of Claim 23

Regarding Claim 23, Fan fails to disclose or suggest in combination with the limitations of Claim 22,

... defining the specified range based on an estimated velocity of the mobile station and a time variable.

Fan determines whether the GPS or INU location fixes are invalid by determining whether a difference between heading rates is greater or less than a threshold. Fan does not determine whether a location fix is within a specified range of a previously generated fix or specify the range based on an estimated velocity of the mobile station and a time variable. Claim 23 is thus further patentably distinguished over Fan.

### Allowability of Claim 24

Regarding Claim 24, Fan fails to disclose or suggest in combination with the limitations of Claim 1,

... evaluating the validity of the location fix for which the validity determination is required by determining whether it is closer to a more recently generated location fix than it is to a less recently generated location fix.

Fan determines whether the GPS or INU location fixes are invalid by comparing gyroscope heading rate with a calculated heading rate, and particularly by determining whether a difference between rates is greater or

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less than a threshold. Fan does not evaluate the validity of a location fix by determining whether it is closer to a more recently generated location fix than it is to a less recently generated location fix. Claim 24 is thus further patentably distinguished over Fan.

#### Allowability of Claim 25

Regarding Claim 25, Fan fails to disclose or suggest in combination with the limitations of Claim 21,

... estimating a future position fix of the mobile station, evaluating the validity of the location fix for which the validity determination is required by determining whether it is within a specified range of the estimated future position fix of the mobile station.

Fan determines whether the GPS or INU location fixes are invalid by comparing gyroscope heading rate with a calculated heading rate, and particularly by determining whether a difference between rates is greater or less than a threshold. Fan does not evaluate the validity of a location fix by determining whether it is within a specified range of the estimated future position fix of the mobile station. Claim 25 is thus further patentably distinguished over Fan.

#### Allowability of Claim 26

Regarding Claim 26, Fan fails to disclose or suggest in combination with the limitations of Claim 25,

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... estimating a velocity of the mobile station, defining the specified range based on the estimated velocity and time interval.

Fan compares a Doppler based velocity with an odometer based velocity determination when the GPS and INU positions do not match. Claim 25 is thus further patentably distinguished over Fan.

#### Allowability of Claim 27

Regarding Independent Claim 27, contrary to the Examiner's assertion, Fan fails to disclose or suggest a

... cellular mobile station, comprising:  
a satellite positioning system signal reception interface in the mobile station for receiving satellite positioning system signals;  
a cellular communications network interface in the mobile station for communicating with a cellular communications network;  
an information processor coupled to the satellite positioning system signal reception interface and the cellular communications network interface,  
the information processor for evaluating the validity of a satellite positioning system based location fix by comparing it to at least one prior mobile station location fix.

At col. 3, lines 2-19, when GPS and inertial navigation unit (INU) position determinations in a mobile machine are mismatched, Fan compares a gyroscope heading rate with a calculated heading rate to determine whether the INU or GPS positions are invalid. Fan does not disclose an information processor for evaluating the validity of a satellite positioning system based



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location fix by comparing it to at least one prior mobile station location fix.  
Claim 27 is thus patentably distinguished over Fan.

#### Allowability of Claim 31

Regarding Claim 31, Fan fails to disclose or suggest in combination with the limitations of Claim 27,

... the information processor for estimating a future position fix of the mobile station and evaluating the validity of the satellite positioning system based location fix by determining whether it is within a specified range of the estimated future position fix.

At col. 3, lines 2-19, when GPS and inertial navigation unit (INU) position determinations in a mobile machine are mismatched, Fan compares a gyroscope heading rate with a calculated heading rate to determine whether the INU or GPS positions are invalid. Fan does not disclose an information processor for estimating a future position fix of the mobile station and evaluating the validity of the satellite positioning system based location fix by determining whether it is within a specified range of the estimated future position fix. Claim 31 is thus patentably distinguished over Fan.

#### Pray For Relief

In view of the amendments and the discussion above, the Claims of the present application are in condition for allowance. Kindly withdraw any rejections and objections and allow this application to issue as a United States Patent without further delay.

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Respectfully submitted,



ROLAND K. BOWLER II 12 MAY 2005  
REG. NO. 33,477

MOTOROLA, INC.  
INTELLECTUAL PROPERTY DEPT. (RKB)  
600 NORTH U.S. HIGHWAY 45, AN475  
LIBERTYVILLE, ILLINOIS 60048

TELEPHONE NO. (847) 523-3978  
FACSIMILE NO. (847) 523-2350